Revealing The Significance of Silica Gel Blue for Transformer Breather

Silica gel is a widely used desiccant that absorbs moisture from its surroundings. In this article, we will discuss the importance of Silica gel blue for transformer breathers.

What is transformer breathing?

Transformers are devices used to transfer power from one circuit to another. This device works on the principle of mutual induction. Hence, this device has no moving or rotating parts, so it is termed a static device.
Like us, transformers can breathe. Vacant space within a transformer is filled with transformer oil for insulation and heat-balancing purposes. When a power transformer is at full load, or when the current in the transformer increases, the oil gets heated up. Oil heating results in the expansion of air and gases nearby it. This air is expelled from the device, which is called breathing out of the transformer or exhalation.
Oil cools down and contracts when the current reduces or is at no-load condition. This will result in the air from the surroundings being pulled into the transformer. This process is known as the breathing-in of a transformer or inhalation.

Significance of Silica gel

When power transformers inhale air from the surroundings, the air is forced through a bed of **blue silica gel crystals.** This silica gel bed is referred to as the **silica gel breather for the transformer**. Silica gel is a highly efficient desiccant.

The transformer oil is an insulator for the windings and other major parts. Suppose, while the breathing-in process, moist air enters the device. This air will get mixed with the transformer oil and can deteriorate different transformer parts. An insulation breakdown will cause reduced efficiency and life of the transformer.

The **blue indicating silica gel desiccant** acts as an effective purifier of the inhaled air. Silica gel will absorb the moisture or dust from inhaled air and keeps the transformer oil stay moist-free. When moist-free or unsaturated, the **silica**

gel breather remains blue. But as moisture from the air is absorbed, it turns pink. This indicates that the silica gel needs to be replaced.

Why silica gel blue?

- Lower vapour pressure - easy adsorption.
- High surface area – high adsorption.
- No chemical reaction, no by-products, and no side effects.
- Stable and reliable.
- Cost-effective desiccant.
- Easily rechargeable.

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